

What is claimed is:

- 1 1. An ATM (Asynchronous Transfer Mode) bridge device to which  
2 an ATM network and a layer 2 network are connected, comprising:  
3 a first learning unit to learn a transmitter address of a  
4 packet input from said ATM network and information about a  
5 transmission path through which said packet had been transmitted  
6 and to judge a destination of said packet based on a result from  
7 the learning;  
8 a second learning unit to learn a transmitter address of  
9 a packet input from said ATM network and information about a  
10 transmission path to which said packet is to be output; and  
11 a packet scrapping judging unit to compare said transmitter  
12 address of said packet input from said ATM network and information  
13 about said transmission path through which said packet had been  
14 transmitted with said transmitter address of said packet learnt  
15 by said second learning unit and information about said  
16 transmission path to which said packet is to be output and, if  
17 said transmitter address of said packet input from said ATM  
18 network and information about said transmission path through  
19 which said packet had been transmitted are matched with said  
20 transmitter address of said packet learnt by said second learning  
21 unit and information about said transmission path to which said  
22 packet is to be output, to scrap said packet.
- 1 2. The ATM bridge device according to Claim 1, wherein, when  
2 a packet is transmitted from a first device on the ATM network  
3 side to a second device on said ATM network side, a loop-back  
4 transmission mode is set to said packet to be received by said

5 second device.

1 3. The ATM bridge device according to Claim 1, wherein, when  
2 a packet is transmitted from a first device on the layer 2 network  
3 side to a second device on said ATM network side, a loop-back  
4 transmission mode is set to said packet to be received by said  
5 second device on said ATM network side.

1 4. The ATM bridge device according to Claim 1, wherein, when  
2 a packet is transmitted by a broadcast method from a first device  
3 on said ATM network side to other devices on said ATM network side,  
4 a loop-back transmission mode is set to said packet to be received  
5 by a second device on said ATM network side.

1 5. The ATM bridge device according to Claim 1, wherein, when  
2 a packet is transmitted by a broadcast method from a first device  
3 on said ATM network side to other devices on said ATM network side,  
4 a loop-back transmission mode is set to said packet to be received  
5 by a second device and a third device on said ATM network side.

1 6. The ATM bridge device according to Claim 1, wherein, when  
2 a packet is transmitted by a broadcast method from a first device  
3 on said layer 2 network side to a device on said ATM network side,  
4 a loop-back transmission mode is set to said packet to be received  
5 by a second device on said ATM network side.

1 7. The ATM bridge device according to Claim 1, wherein, when  
2 a packet is transmitted from a first device on said ATM network  
3 side to a first device on said layer 2 network side, a loop route

4 is formed on said layer 2 network side.

1 8. The ATM bridge device according to Claim 1, wherein logical  
2 transmission paths to be used for bidirectional connection in said  
3 ATM network are different from each other.

1 9. The ATM bridge device according to Claim 1, wherein a VRRP  
2 (Virtual Router Redundancy Protocol) is applied in said ATM  
3 network and said layer 2 network.

1 10. A loop detecting method for detecting a loop formed in an  
2 ATM bridge device to which an ATM network and a layer 2 network  
3 are connected, said method comprising:

4 a first learning step of learning a transmitter address of  
5 a packet input from said ATM network and information about a  
6 transmission path through which said packet had been transmitted  
7 and to judge a destination of said packet based on a result from  
8 the learning;

9 a second learning step of learning a transmitter address  
10 of a packet input from said ATM network and information about a  
11 transmission path to which said packet is to be output; and

12 a packet scrapping judging step of comparing said  
13 transmitter address of said packet input from said ATM network  
14 and information about said transmission path through which said  
15 packet had been transmitted with said transmitter address of said  
16 packet learnt in said second learning step and information about  
17 said transmission path to which said packet is to be output and,  
18 if said transmitter address of said packet input from said ATM  
19 network and information about said transmission path through

20 which said packet had been transmitted are matched with said  
21 transmitter address of said packet learnt in said second learning  
22 step and information about said transmission path to which said  
23 packet is to be output, to scrap said packet.

1 11. The loop detecting method according to Claim 10, wherein,  
2 when a packet is transmitted from a first device on said ATM network  
3 side to a second device on said ATM network side, a loop-back  
4 transmission mode is set to said packet to be received by said  
5 second device.

1 12. The loop detecting method according to Claim 10, wherein,  
2 when a packet is transmitted from a first device on said layer  
3 2 network side to a second device on said ATM network side, a  
4 loop-back transmission mode is set to said packet to be received  
5 by said second device on said ATM network side.

1 13. The loop detecting method according to Claim 10, wherein,  
2 when a packet is transmitted by a broadcast method from a first  
3 device on said ATM network side to other devices on said ATM network  
4 side, a loop-back transmission mode is set to said packet to be  
5 received by a second device on said ATM network side.

1 14. The loop detecting method according to Claim 10, wherein,  
2 when a packet is transmitted by a broadcast method from a first  
3 device on said ATM network side to other devices on said ATM network  
4 side, a loop-back transmission mode is set to said packet to be  
5 received by a second device and a third device on said ATM network  
6 side.

1 15. The loop detecting method according to Claim 10, wherein,  
2 when a packet is transmitted by a broadcast method from a first  
3 device on said layer 2 network side to a device on said ATM network  
4 side, a loop-back transmission mode is set to said packet to be  
5 received by a second device on said ATM network side.

1 16. The loop detecting method according to Claim 10, wherein,  
2 when a packet is transmitted from a first device on said ATM network  
3 side to a first device on said layer 2 network side, a loop route  
4 is formed on said layer 2 network side.

1 17. The loop detecting method according to Claim 10, wherein  
2 logical transmission paths to be used for bidirectional  
3 connection in said ATM network are different from each other.

1 18. The loop detecting method according to Claim 10, wherein  
2 a VRRP is applied in said ATM network and said layer 2 network.

1 19. An ATM (Asynchronous Transfer Mode) bridge device to which  
2 an ATM network and a layer 2 network are connected, comprising:  
3 a first learning means to learn a transmitter address of  
4 a packet input from said ATM network and information about a  
5 transmission path through which said packet had been transmitted  
6 and to judge a destination of said packet based on a result from  
7 the learning;  
8 a second learning means to learn a transmitter address of  
9 a packet input from said ATM network and information about a  
10 transmission path to which said packet is to be output; and  
11 a packet scrapping judging means to compare said

12 transmitter address of said packet input from said ATM network  
13 and information about said transmission path through which said  
14 packet had been transmitted with said transmitter address of said  
15 packet learnt by said second learning means and information about  
16 said transmission path to which said packet is to be output and,  
17 if said transmitter address of said packet input from said ATM  
18 network and information about said transmission path through  
19 which said packet had been transmitted are matched with said  
20 transmitter address of said packet learnt by said second learning  
21 means and information about said transmission path to which said  
22 packet is to be output, to scrap said packet.

1 20. The ATM bridge device according to Claim 19, wherein, when  
2 a packet is transmitted from a first device on the ATM network  
3 side to a second device on said ATM network side, a loop-back  
4 transmission mode is set to said packet to be received by said  
5 second device.

1 21. The ATM bridge device according to Claim 19, wherein, when  
2 a packet is transmitted from a first device on the layer 2 network  
3 side to a second device on said ATM network side, a loop-back  
4 transmission mode is set to said packet to be received by said  
5 second device on said ATM network side.

1 22. The ATM bridge device according to Claim 19, wherein, when  
2 a packet is transmitted by a broadcast method from a first device  
3 on said ATM network side to other devices on said ATM network side,  
4 a loop-back transmission mode is set to said packet to be received  
5 by a second device on said ATM network side.

1 23. The ATM bridge device according to Claim 19, wherein, when  
2 a packet is transmitted by a broadcast method from a first device  
3 on said ATM network side to other devices on said ATM network side,  
4 a loop-back transmission mode is set to said packet to be received  
5 by a second device and a third device on said ATM network side.

1 24. The ATM bridge device according to Claim 19, wherein, when  
2 a packet is transmitted by a broadcast method from a first device  
3 on said layer 2 network side to a device on said ATM network side,  
4 a loop-back transmission mode is set to said packet to be received  
5 by a second device on said ATM network side.

1 25. The ATM bridge device according to Claim 19, wherein, when  
2 a packet is transmitted from a first device on said ATM network  
3 side to a first device on said layer 2 network side, a loop route  
4 is formed on said layer 2 network side.

1 26. The ATM bridge device according to Claim 19, wherein logical  
2 transmission paths to be used for bidirectional connection in said  
3 ATM network are different from each other.

1 27. The ATM bridge device according to Claim 19, wherein a VRRP  
2 (Virtual Router Redundancy Protocol) is applied in said ATM  
3 network and said layer 2 network.